

**INNOVATION AND POTENTIAL COMPETITION  
IN RAPIDLY-CHANGING HIGH-TECH INDUSTRIES**

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Few question the close link between innovation and economic progress. Economists and others recognize that protecting the incentives to innovate is a necessary component of nurturing economic growth.<sup>1</sup> The events of the past decade have only strengthened this view, as the prominence of high-tech industries has made apparent the relationship between research and development, rapid technological change, and economic growth. Innovation, as some have said, is King.<sup>2</sup>

The importance of innovation has been impressed upon U.S. antitrust enforcement authorities as well. This paper briefly examines the role of innovation markets in merger analysis and the practical difficulties of predicting the consequences of mergers that impact innovation. As a matter of antitrust law and policy, innovation is a multi-dimensional concern that presents numerous doctrinal and analytical difficulties. The complications stem from the inherent inability to know how or when successful innovation will strike, and from the fact that

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<sup>1</sup> See Richard J. Gilbert & Steven C. Sunshine, “Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets,” 63 Antitrust L.J. 569 (1995) (citing Robert M. Solow, “Technical Change and the Aggregate Production Function,” 39 Rev. Econ. & Stat. 312 (1957)).

<sup>2</sup> See Michael J. Mandel, “Antitrust for the Digital Age: Prices Still Matter, But Justice’s Focus is Increasingly on Fostering Innovation,” Business Week, May 15, 2000.

innovation itself is a form of non-price competition that stretches the limits of what antitrust law can—and should—address. This paper contends that many of the most stubborn difficulties in innovation analysis can already be reconciled under existing antitrust law and the potential competition doctrine. The market-realities approach adopted in those cases can and should provide guidance in innovation-related mergers as well.

## **I. THE MANY FACES OF INNOVATION**

Not without significant debate, innovation markets have been introduced into antitrust doctrine. The 1995 Intellectual Property Guidelines state that the agencies will consider the effects of a licensing agreement on “innovation markets,” which are defined as markets for “research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development.”<sup>3</sup> The recently-issued Joint Venture Guidelines likewise are sensitive to innovation concerns. The Joint Venture Guidelines create a safe harbor from agency challenge for a competitor collaboration that affects innovation markets, provided that there are at least three independent efforts engaged in research and development that are close substitutes for that of the collaboration.<sup>4</sup>

Concerns about innovation are more broadly relevant in antitrust law and policy than in the IP-licensing and joint venture contexts. In high-tech markets, innovation issues can have several dimensions:<sup>5</sup>

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<sup>3</sup> Antitrust Guidelines for the Licensing of Intellectual Property § 3.2.3 (1995).

<sup>4</sup> Antitrust Guidelines for Collaborations Among Competitors § 4.3 (2000)

<sup>5</sup> The first three categories are loosely based on the analytical categories set forth in William F. Baxter, “The Definition and Measurement of Market Power in Industries

(Continued ...)

- *Effects on R&D markets:* R&D markets exist in several forms. Businesses may have overlapping areas of R&D inquiry, regardless of whether the firms currently compete in an existing product market, or are capable of marketing actual products. Scientific think-tanks or consulting firms in the same specialty field may be thought of as participating in an innovation market if the firms compete with each other in selling their R&D services to customers in their area of specialization. The underlying concern with innovation markets is that eliminating one of these firms would slow the pace of technological development by reducing the resources devoted to R&D. On the other hand, in many (if not most) instances, mergers in innovation markets may result in a pooling of R&D resources and create economies of scale that foster rather than deter further innovation.
- *Effects on existing markets:* In many fields, the nature of a firm's R&D activity is shrouded in secrecy. However, in markets such as the pharmaceutical industry, where regulatory disclosures allow competing firms to be made aware of the R&D efforts of their rivals, current behavior may be disciplined or otherwise affected by the likelihood of innovation. Furthermore, a firm may tailor its pricing and marketing activities in response to its on-going R&D efforts that the firm is reasonably certain will be successful. R&D and innovation can therefore have an impact on existing markets.

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Characterized by Rapidly Developing and Changing Technologies," 53 Antitrust L.J. 717 (1985).

- *Effects on future markets:* Beyond introducing new products in existing markets, innovation can create an entirely new product or geographic markets. Innovation may be paradigm-shifting and create new technologies that do not function simply as substitutes for existing ones. Such an impact is often unforeseen and difficult to account for in standard antitrust analysis. Yet it is critical to appreciate this effect to understand completely the possible consequences of innovation mergers in high-tech industries.
- *“Spillover” effects on other markets:* Innovation in one field can impact closely related areas—or, sometimes, in not so closely related areas. Improvements in manufacturing processes, for example, can impact several disparate products and create a more efficient production process in a number of different markets. The fact that innovation can cut across several markets at once makes it difficult to locate the markets in which innovation mergers will have competitive impact.

In the broadest sense, mergers that affect innovation can impact markets in any of these ways. Yet antitrust law cannot and should not address every remote competitive harm that can possibly be conceived. Antitrust law must be capable of efficient and predictable administration, and must be grounded in market realities if it is to serve its objective of protecting consumer welfare. As described below, the idea of innovation raises several challenges that antitrust doctrine must address.

## **II. THE DOCTRINAL DIFFICULTIES WITH INNOVATION**

Introducing innovation markets and innovation issues into traditional antitrust analysis has challenged antitrust doctrine to address what appear to be new and complex issues.

Innovation markets seem to stretch the envelope of existing antitrust doctrine in several fundamental ways.

The first and somewhat obvious point about innovation is that it is a stubborn subject for inquiry because it is largely resistant to meaningful quantitative economic analysis. The problem stems from the fact that innovation (the creation of new products and services) is not synonymous with R&D (the process by which such new products are developed). Innovation can strike at any time, and in unpredictable ways. Of course, intuitively we may conclude that innovation is more likely to occur in response to a greater investment in R&D. But if R&D is a necessary precondition to innovation, it is clearly not the only factor. Studies have not proven that the effect of a merger on innovation can be easily ascertained by counting patents, laboratories, or scientists. Other considerations—such as differential rates of innovation in products or industries, or the closeness of substitutes in given product markets—must also be taken into account.

From an analytical perspective, the innovation-related effect of a high-tech merger must be measured by looking at how the change to the pace of innovation will effect the likelihood of new “entry” into the market, in the form of new products or services—in other words, an estimate of the effect of change measured over time. Given the inherent uncertainty in the relationship between R&D and new product introduction, and the many obstacles and difficulties in bringing new products to market, this is by no means an easy assessment to make.

Of course, a similar argument could apply to all mergers, because there is always some degree of uncertainty in predicting future consequences of current actions, and the forward-looking analysis under Section 7 deals with probabilities, not certainties, in considering whether

the effect of the merger is “substantially to lessen competition, or to tend to create a monopoly.”<sup>6</sup> However, innovation-related analysis adds layers of uncertainty to the process by requiring the identification of products that are likely succeed in the market and an estimation of how long before this success could be attained. Innovation’s intrinsic resistance to predictability is one of the core difficulties of applying innovation concepts to traditional antitrust analysis.

The second problem is that, because innovation is a form of non-price competition, it is not a standard category of antitrust analysis. Antitrust law is predicated on the notion that, all things being equal, consumers are better off with lower prices. This is reflected in many ways, including in the 1992 Merger Guidelines, which focus on the effects of a merger on price in a relevant product and geographic market. Yet innovation is a non-price aspect of competition. Like other forms of non-price competition (such as advertising and marketing expenditures), the benefit to consumers of innovation competition is not immediately obvious. Consumers are unquestionably better off with increased product innovation, provided that increased innovation does not result in a reduction in the supply or increase in the price of the product. Yet consumers may be worse off if innovation competition becomes wasteful, leading to higher prices as companies must subsidize costly research efforts.<sup>7</sup> In other words, it is cost-effective innovation that provides consumer benefit, and it is very frequently the case that economies of scale are generated when competing innovation resources are joined together.<sup>8</sup> Because demonstrating

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<sup>6</sup> 15 U.S.C. § 18.

<sup>7</sup> See Richard T. Rapp, “The Misapplication of the Innovation Market Approach to Merger Analysis,” 64 *Antitrust L.J.* 19, 34-35 (1995).

<sup>8</sup> See Gilbert & Sunshine, *supra* note 1, at 572-73.

that a merger will slow innovation is different from showing that the merger will raise prices, antitrust law cannot--and should not--protect innovation simply for innovation's sake.

A final complication with innovation is that there is no consensus as to the market conditions that best promote innovation. Joseph Schumpeter (and others) argued that innovation is closely associated with market concentration, because a monopolist has a greater ability to absorb the costs and risks inherent in the R&D process. Dominant firms may also be better able to reap the benefits of innovation in a given market, and may have the incentives to innovate in order to protect its monopoly profits. However, others have contended that innovation is more vigorous in competitive industries.<sup>9</sup> Michael Porter has contended that "rivalry has a direct role in stimulating improvement and innovation."<sup>10</sup> Empirical studies have not established a close link between concentration and innovation,<sup>11</sup> and most now agree with Areeda and Turner's conclusion that "neither theory nor evidence suggests that substantial market power is so generally conducive to technological progress that toleration or encouragement would be desirable."<sup>12</sup>

These are some basic reasons why it has been difficult to fix potentially anticompetitive activity in innovation markets while preserving the incentives to innovate. Yet the concerns about mergers that result in diminished innovation in an industry remain very real. As described

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<sup>9</sup> See Gilbert & Sunshine, supra note 1, at 576.

<sup>10</sup> Michael E. Porter, The Competitive Advantage of Nations 143 (1990).

<sup>11</sup> See Rapp, supra note 7, at 28-30.

<sup>12</sup> IIA Phillip Areeda & Donald Turner, Antitrust Law: An Analysis of Antitrust Principles and Their Application ¶ 407d (1995).

in the next section, the potential competition doctrine already addresses many of the forward-looking issues raised in the debate over innovation markets. Conditions under which innovation may be chilled are largely addressed under the existing doctrine of potential competition.<sup>13</sup>

### III. INNOVATION AND POTENTIAL COMPETITION

Under the “actual potential competition” theory, mergers between potential competitors substantially harm competition if, but for the merger, the acquiring firm would otherwise enter the market in a more pro-competitive manner, either as a de novo entrant or through a “toe-hold” acquisition of an existing smaller competitor. The competitive injury thus comes from the lost opportunity to improve the competitiveness of the market. The Supreme Court has twice left open the question of whether a merger can violate Section 7 only on the grounds that it eliminates an actual potential competitor.<sup>14</sup> However, the actual potential competition theory has been embraced by the Merger Guidelines and by subsequent lower court cases and agency actions. Its corollary, the “perceived” potential competition theory, addresses mergers that eliminate a firm on the fringe of the market, if that firm presently constrains the behavior of firms already in the market (the so-called “wings effect”). Actual and perceived potential

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<sup>13</sup> See Sumanth Addanki, “Antitrust Analysis of High Technology Mergers: The Role of Potential Competition,” testimony before FTC Hearings on Global and Innovation-Based Competition (Oct. 25, 1995), available at <http://www.ftc.gov/opp/global/addanki.html>.

<sup>14</sup> See United States v. Falstaff Brewing Corp., 410 U.S. 526, 537 (1973); United States v. Marine Bancorporation, Inc., 418 U.S. 602, 639 (1974).

competition are closely-related theories and are enforced under the same structural analysis set forth in the Merger Guidelines.<sup>15</sup>

In cases that address mergers affecting actual potential competition, courts have held that actual potential competition will be harmed if (1) the relevant market is oligopolistic; (2) absent the acquisition, the acquiring firm would have entered the market in the near future either de novo or through a toe-hold acquisition; and (3) such independent entry by the acquiring firm would have yielded significant procompetitive benefits.<sup>16</sup> Potential competition should only be implicated when a merger eliminates one of only a few likely entrants. If the market is not concentrated, or if barriers to entry are low, there will be other firms who are capable of entering and competing in the market. Elimination of a potential competitor in those situations is not an event of competitive significance.

Application of the potential competition doctrine requires an assessment of the likelihood that independent entry would occur, but for the merger. Courts have considered both objective evidence (i.e., does independent entry make economic sense for the acquiring firm?) as well as

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<sup>15</sup> See 1984 Merger Guidelines § 4.13. The 1992 Merger Guidelines reaffirmed the earlier guidelines' policy on potential competition. See Statement Accompanying Release of Revised Merger Guidelines (Apr. 2, 1992). Five factors are relevant in a Guidelines analysis of potential competition mergers: (1) market concentration (potential competition mergers are unlikely to be challenged unless overall concentration is over 1800 HHI); (2) general entry conditions (potential competition mergers are unlikely to be challenged if entry can be accomplished by firms without specific entry advantages); (3) acquiring firm's entry advantage (potential competition mergers are unlikely to be challenged if the entry advantage of the acquiring firm is also possessed by three or more other firms); (4) market share of acquired firm (potential competition mergers are unlikely to be challenged if the acquired firm has a market share of five percent or less, e.g., a toe-hold acquisition); (5) efficiencies (expected efficiencies must also be considered).

<sup>16</sup> See, e.g., Tenneco, Inc. v. FTC, 689 F.2d 346, 352 (2d Cir. 1982).

subjective evidence (i.e., did the acquiring firm actually contemplate independent entry?). Often, strong objective evidence has trumped subjective indications with regard to the acquiring firm's intent. In Raybestos-Manhattan, Inc. v. Hi-Shear Industries, Inc.,<sup>17</sup> the court held that Raybestos was not an actual potential competitor in the market for aerospace fasteners, even though its subsidiary produced general purpose commercial fasteners. The court considered evidence that the subsidiary had taken several steps toward entering the market, such as purchasing a plant capable of building the fasteners, and declarations made by management that it intended to enter the market. However, the court considered the substantial barriers to entry into the market, and gave weight to evidence that the subsidiary had not upgraded its quality control system to meet the exacting standards of the industry, and had failed to obtain the necessary patent licenses, engineering and research expertise, and sales personnel.<sup>18</sup> The likelihood of entry in light of these conditions was too remote to support a finding that the merger would harm potential competition.

As it has developed, the potential competition doctrine is sufficiently flexible to address the concerns about potential effects on innovation markets. The pace of innovation will likely be slowed by a merger if two conditions are met.<sup>19</sup> First, a merger will result in a reduction in innovation only if the merged firm has the ability to suppress efforts to innovate. This will require access to assets (such as human capital or, perhaps, a sophisticated research facility) that is not readily available to others. Firms that are still in the research-only stage are less likely to

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<sup>17</sup> 503 F. Supp. 1122 (E.D.N.Y. 1980).

<sup>18</sup> Id. at 1136.

<sup>19</sup> See Addanki, supra note 13, at 1.

have the type of resources that cannot be duplicated by rivals. On the other hand, a firm with an existing and sizable presence in a related product market may have specialized assets. It is therefore critical that claims based on innovation market analysis identify with specificity the specialized assets that the firms possess—something that the enforcement authorities have not always been willing to do.

The second condition to impacting the pace of innovation is whether the merger affects the incentives to innovate. As discussed earlier, innovation is extremely difficult to predict. Successful new products may come from a competing firm's R&D in the same area of inquiry. It may also come from a non-competing firm's R&D into other areas. In light of this, it is difficult to see why a merged firm would actively discourage its R&D efforts. Of course, duplicative R&D efforts could be discontinued, but this is not a concern for antitrust law because there is no incentive to discourage its cost-effective, socially-desirable R&D. However, an incentive to slow innovation may exist when the R&D of the two firms is directed at a product or market in which one of the firms already has a major presence.<sup>20</sup> In those instances, a firm may wish to protect its current position in the market by chilling future innovations. Thus, it would seem that the ability and incentive to slow the pace of innovation is most likely to be present when one of the merged firms already has existing products in the relevant market.

These are the same conditions—the so-called “conglomerate mergers”—that give rise to the existing law under the potential competition doctrine. If there is no potential for the products in development to compete with the existing products on the market, there is no incentive to discourage innovation. Similarly, if there are many existing substitutable products in

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<sup>20</sup> See Addanki, supra note 13 at 2.

development, or if there are many firms who are engaged in substitutable research in the same field, the innovation market merger will have no anticompetitive effects.

For example, in challenging Zeneca Group plc's proposed \$30.5 billion acquisition of Astra AB, the Federal Trade Commission alleged that the merger would substantially lessen competition in the market for long-acting local anesthetics.<sup>21</sup> Astra was the leading supplier of long-acting local anesthetics and was one of only two companies that had secured FDA approval for sale of long-acting local anesthetics in the U.S. Zeneca did not sell long-acting anesthetics. However, Zeneca had entered into an agreement with a third company to assist in the marketing and development of a new long-acting local anesthetic. The FTC contended that the merger would eliminate this new source of competition and leave the market highly concentrated. The consent decree required Zeneca to divest its interest in the new product. Ultimately, however, this case illustrates the use of potential competition to address innovation issues. Because (according to the FTC) there was an absence of other long-acting local anesthetics, and because of the entry barriers created by the drug research and approval process, the potential competition doctrine was properly applied to protect on-going product development and innovation in the market.

A different situation arises when both firms are in the research-only stage. When no firm has brought a product to market, the application of innovation markets is strained and should be

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<sup>21</sup> See In re Zeneca Group plc, File No. 991-0089 (consent decree, Mar. 25, 1999).

confined narrowly to instances in which there is a clearly-identified specialized assets and when the timing of entry can be easily predicted.

This is illustrated by a recent example from the pharmaceutical industry. In challenging Glaxo plc's planned \$14.3 billion acquisition of Wellcome plc, the FTC alleged that the deal would substantially lessen competition in the U.S. market for the research and development of oral drugs to treat migraine attacks.<sup>22</sup> Current migraine drugs were available only in injectable form and were not deemed substitutable for the orally-administered medicine.<sup>23</sup> Glaxo and Wellcome were the leading firms in developing the oral drug. The complaint alleged that the after the merger Glaxo would be able to unilaterally decrease R&D efforts to develop the drug and that Glaxo would have incentive to do so, as (according to the FTC) it would take a third firm many years to complete the FDA process for approval of an oral drug. Divestiture of Wellcome's R&D in this area was therefore ordered.<sup>24</sup>

This case demonstrates the perils of applying innovation analysis to situations in which neither firm has yet to enter the market. It is only a matter of speculation that preserving separate R&D tracks would improve the pace of technical change, or that the merged firm would have dropped the research into the competing drug. As one commentator has noted, “[a]

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<sup>22</sup> See In re Glaxo plc, Dkt. No. C-3586 (June 14, 1995).

<sup>23</sup> See William J. Baer, “Antitrust Enforcement and High Technology Markets,” remarks before the ABA Sections of Business Law, Litigation, and Tort and Insurance Practice (Nov. 12, 1998), available at <http://www.ftc.gov/speeches/other/ipat6.htm>.

<sup>24</sup> A short discussion of this matter can be found at Richard J. Gilbert & Willard K. Tom, “Is Innovation King at the Antitrust Agencies?: The Intellectual Property Guidelines Five Years Later,” (paper presented at 2001 Spring Meeting of the Antitrust Section of the American Bar Association), at 10.

confident-sounding avowal in a complaint or consent order that R&D competition will be enhanced by the preservation of an extra actor in an innovation market simply does not carry over to a useful conclusion about the effect on innovation and welfare in the same way that preserving pricing voices does in conventional product markets.”<sup>25</sup>

In the final analysis, it may be the case that the enforcement agencies are not inclined to challenge mergers on innovation grounds in the absence of other, more traditional antitrust obstacles to the deal. A recent thought-provoking article has suggested that, in the overwhelming number of merger cases that have alleged impacts on innovation markets, the competitive effects in existing product markets were sufficiently troubling to warrant enforcement challenges to the mergers.<sup>26</sup> In other words, while it has become a hot topic for discussion in antitrust circles, innovation has not had a dramatic impact on the types of challenges brought by the enforcement authorities. In its application, the concept of innovation markets may already have been subsumed within existing antitrust doctrine.

#### **IV. CONCLUSION**

By considering the realities of the market (including the presence of specialized assets, the ability of other firms to complete the research and enter the market, and the predictability of new product entry), the potential competition doctrine is sufficiently flexible to address virtually all of the competitive issues that may arise in innovation market mergers in high-tech industries. It has been persuasively argued elsewhere that the concept of innovation markets permits the

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<sup>25</sup> Rapp, supra note 7, at 45.

<sup>26</sup> See Gilbert & Tom, supra note 24.

enforcement agencies to reach conduct that could not be addressed under potential competition theories.<sup>27</sup> Clearly, the two concepts are interrelated. The agencies are already capable of addressing anticompetitive mergers in innovation markets under the existing potential competition doctrine.

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<sup>27</sup> See Robert J. Hoerner, “Innovation Markets: New Wine in Old Bottles?,” 64 Antitrust L.J. 49, 50-55 (1995).